

EXHIBIT 16

EXHIBIT H

U.S. Patent No. 11,399,206 (the “’206 Patent”) Exemplary Infringement Chart

Comcast operates and maintains a nationwide television and data network through which it sells, leases, and offers for sale products and services, including the Technicolor TC8717 cable modem, Technicolor CGM4140 cable modem, Technicolor CGM4331 cable modem, and products that operate in a similar manner (“Accused Cable Modem Products”), as well as the Arris AX013ANC STB, Arris AX013ANM STB, Arris AX014ANC STB, Arris AX014ANM STB, Arris MX011ANC STB, Arris MX011ANM STB, Pace PX013ANC STB, Pace PX013ANM STB, Pace PX022ANC STB, Pace PX022ANM STB, Samsung SX022ANC STB, Samsung SX022ANM STB, and products that operate in a similar manner (“Accused Set Top Products”). Comcast provides cable television and internet services (“Accused Services”) via the lease, sale, and/or distribution of the Accused Cable Modem Products and/or the Accused Set Top Products. Comcast literally and/or under the doctrine of equivalents infringes the claims of the ’206 Patent by making, using, selling, offering for sale, and/or importing the Accused Services, Accused Cable Modem Products, and/or the Accused Set Top Products.

As shown below in the chart with exemplary support, the Accused Services infringe at least claims 13, 14, 19, 21, 23, 25, 26, 31, 34, 35, 38, 39, 44, 47, and 48 of U.S. Patent No. 11,399,206 (“’206 Patent”). The ’206 Patent was filed January 28, 2022, issued July 26, 2022, and is entitled “Method for Receiving a Television Signal.” The ’206 Patent claims priority to U.S. Patent Application Serial No. 17/217,244, filed on Mar. 30, 2021; U.S. Patent Application Serial No. 16/430,506, filed on Jun. 4, 2019; U.S. Patent Application Serial No. 15/792,318, filed Oct. 24, 2017; U.S. Patent Application Serial No. 14/948,881, filed Nov. 23, 2015, U.S. Patent Application Serial No. 14/617,973, filed on Feb. 10, 2015; U.S. Patent Application Serial No. 13/962,871, filed on August 8, 2013; U.S. Patent Application Serial No. 12/762,900, filed on April 19, 2010; and U.S. Provisional Patent Application No. 61/170,526, filed April 17, 2009.

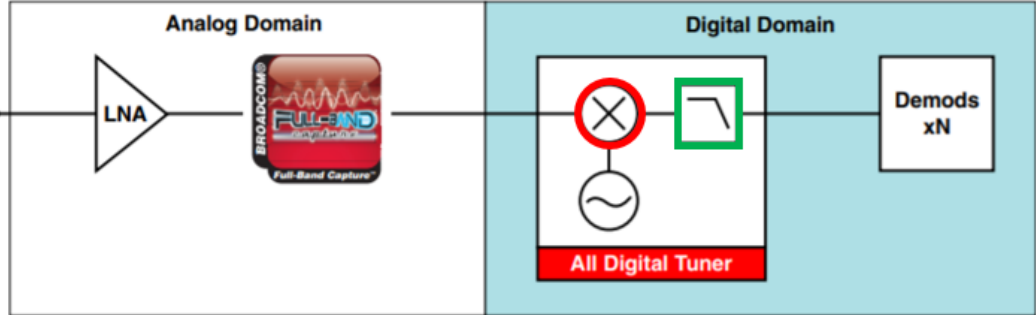
The Accused Services perform the claimed methods using, for example, the Accused Set Top Products and/or the Accused Cable Modem Products. The Accused Services infringe the claims of the ’206 Patent, as described below, either directly under 35 U.S.C. § 271(a), or indirectly under 35 U.S.C. §§ 271(b)–(c).

| # | U.S. Patent No. 11,399,206 | Accused Products and Services |
|--------------|---|--|
| 13pre | 13. A method comprising: | <p>The Accused Services are provided by the claimed system by utilizing, for example, the Accused Set Top Products, which include at least one set top box (“STB”) located at each subscriber location, including, for example, the Arris AX013ANC STB, Arris AX013ANM STB, Arris AX014ANC STB, Arris AX014ANM STB, Arris MX011ANC STB, Arris MX011ANM STB, Pace PX013ANC STB, Pace PX013ANM STB, Pace PX022ANC STB, Pace PX022ANM STB, Samsung SX022ANC STB, Samsung SX022ANM STB, and products that operate in a similar manner, and/or the Accused Cable Modem Products including, for example, the Technicolor TC8717 cable modem, Technicolor CGM4140 cable modem, Technicolor CGM4331 cable modem, and products that operate in a similar manner, located at each subscriber location.</p> <p>By way of example, the Technicolor CGM4140 cable modem is charted herein. As described below, the Technicolor CGM4140 has a Broadcom BCM3390 SoC. On informed belief, all cable modems deployed by or enabled by Comcast that contain the BCM3383, BCM3384, and BCM33843 series chips operate substantially the same as the BCM3390 series chips for purposes of the ’206 Patent. As there are no functional differences between the BCM33843 SoC and BCM3390 SoC that impacts infringement of the ’206 Patent, documents describing the operation of the BCM33843 SoC equally describe the operation of the BCM3390 SoC.</p> <p>Therefore, the Technicolor CGM4140 is representative of all Accused Set Top Products and Accused Cable Modem Products, including those having BCM3383, BCM3384, BCM33843, or BCM3390 SoCs.</p> <p>Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions.</p> |
| 13a | receiving an input signal from a cable network; | The Accused Set Top Products and the Accused Cable Modem Products receive an input signal from a cable network as described below. |

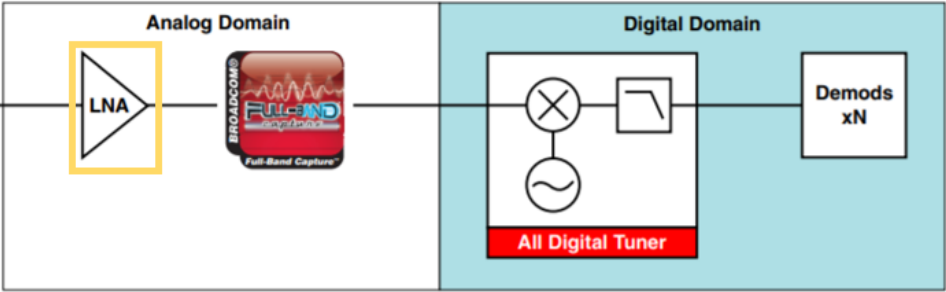
| # | U.S. Patent No. 11,399,206 | Accused Products and Services |
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| | | <p>Specifically, the Technicolor CGM4140 has applicable circuitry and/or software modules constituting wideband ADC, see 13b below. For example, the Technicolor CGM4140 has a Broadcom BCM3390 SoC, highlighted in red below. The Technicolor CGM4140 has at least one RF connector, highlighted in blue, operable to receive an input signal from a cable network.</p> <div data-bbox="743 451 1755 1344"> </div> |

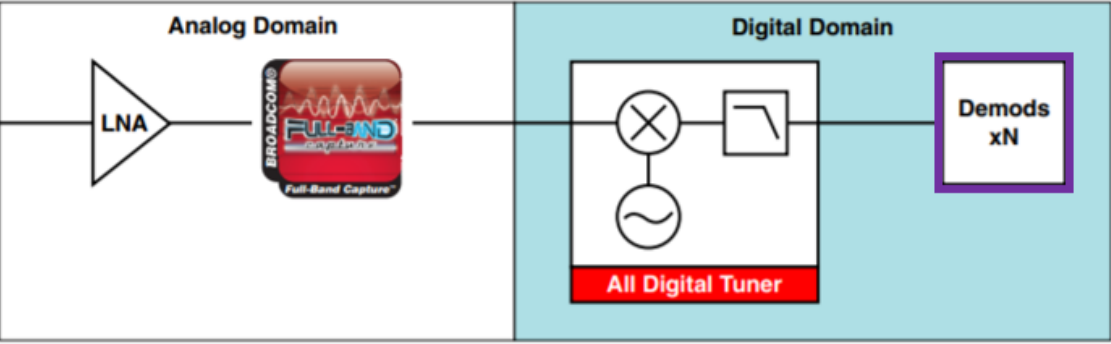
| # | U.S. Patent No. 11,399,206 | Accused Products and Services |
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| | | <p>Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions.</p> |
| 13b | <p>digitizing all received channels in the input signal via a wideband analog-to-digital converter (ADC), wherein the received channels comprise a plurality of desired channels and a plurality of undesired channels;</p> | <p>The Accused Set Top Products and the Accused Cable Modem Products digitize said received signal to generate a digitized signal.</p> <p>The Technicolor CGM4140 includes applicable circuitry and/or software modules providing a wideband ADC, for example a Broadcom BCM3390 SoC. The Technicolor CGM4140 receives the entire ~1GHz downstream spectrum of a Comcast cable plant. The entire downstream spectrum includes received channels, including desired and undesired channels. The Technicolor CGM4140, using its applicable circuitry and/or software modules, digitizes the received signal to generate a digitized signal.</p> <p>“The new BCM3384 DOCSIS®/Euro-DOCSIS™ 3.0 cable gateway SoC combines Broadcom's Full-Band Capture (FBC) digital tuning technology with remote diagnostics, dual-band concurrent Wi-Fi, a custom, dedicated applications processor and integrated DECT 6.0 CAT-iq 2.0. ... Broadcom’s new BCM33843 is pin compatible ... Broadcom is now sampling [as of Jan 08, 2031] the BCM3384 and BCM33843” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002036)</p> <p>“Full-Band Capture digital tuning technology and remote diagnostics: Integrated on-chip technology directly samples and digitizes the entire 1GHz downstream spectrum of a cable plant, providing access to any channel anywhere. Remote diagnostics provides real time, unobtrusive diagnostic and spectrum analysis capabilities, without effecting user service on any of the 24 downstream channels.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> |

| # | U.S. Patent No. 11,399,206 | Accused Products and Services |
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| | | Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions. |
| 13c | digitally down converting each desired channel, of the plurality of desired channels, to generate a plurality of digital channel outputs; and | <p>The Accused Set Top Products and the Accused Cable Modem Products digitally down convert each desired channel, of the plurality of desired channels, to generate a plurality of digital channel outputs as described below.</p> <p>Specifically, the Technicolor CGM4140 includes has applicable circuitry and/or software modules constituting a mixer module operating on the digitized signal. For example, the applicable circuitry and/or software modules of the Technicolor CGM4140 utilize advanced signal processing techniques, including a mixer, which can be used to digitally downconvert the plurality of desired channels. For example, the Technicolor CGM4140 receives an analog signal that creates a digital representation of the entire 1GHz downstream spectrum of the input signal. The composite broadband signal contains a plurality of received channels, some of which are desired channels and some of which are undesired channels. The Technicolor CGM4140 tunes the resulting series of binary values within the composite digital broadband signal, and shifts (i.e., downconverts) the frequency of the channels desired to baseband, which constitutes the digital channel outputs. For example, as described below, applicable circuitry and/or software modules of the Broadcom BCM3390 SoC includes a mixer module (highlighted below in red) and a filter (highlighted below in green) used to frequency shift (i.e., downconvert) the digitized channels in the digitized input signal from a higher frequency to a lower frequency (i.e., a baseband frequency).</p> |

| # | U.S. Patent No. 11,399,206 | Accused Products and Services |
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| | | <p>Full-Band Capture Digital Tuner Architecture</p>  <p>(ENTROPIC_COMCAST_002029 at ENTROPIC_COMCAST_002031, annotated)</p> <p>“Full-Band Capture digital tuning technology and remote diagnostics: Integrated on-chip technology directly samples and digitizes the entire 1GHz downstream spectrum of a cable plant, providing access to any channel anywhere. Remote diagnostics provides real time, unobtrusive diagnostic and spectrum analysis capabilities, without effecting user service on any of the 24 downstream channels.”</p> <p>(ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p>Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions.</p> |
| 13d | providing the plurality of digital channel outputs via a serial interface. | <p>The Accused Set Top Products and Accused Cable Modem Products provide the plurality of desired channels via a serial interface as described below.</p> <p>More specifically, the Technicolor CGM4140, using its applicable circuitry and/or software modules, outputs the desired channels from a filter to one or more demodulators. On informed belief, the output is via a serial interface. For example and on informed belief, the Arris</p> |

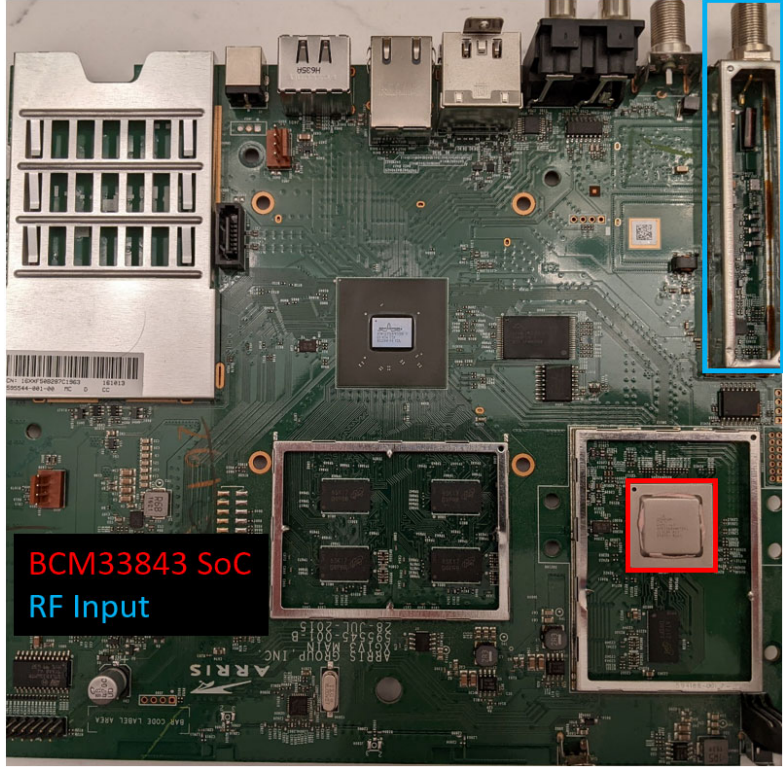
| # | U.S. Patent No. 11,399,206 | Accused Products and Services |
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| | | <p>AX013ANM, using applicable circuitry and/or software modules contained in the BCM3390 SoC, outputs the digital datastream from the filter (highlighted below in green) to the demodulators (highlighted below in purple) via a serial interface.</p> <p>Full-Band Capture Digital Tuner Architecture</p> <p>(ENTROPIC_COMCAST_002029 at ENTROPIC_COMCAST_002031, annotated)</p> <p>Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions.</p> |
| 14 | <p>14. The method of claim 13, wherein the method comprises: communicating the input signal from a cable network connector to the wideband ADC via at least one of an analog amplifier and an analog filter.</p> | <p>The Accused Set Top Products and Accused Cable Modem Products communicate the input signal from a cable network connector to the wideband ADC via at least one of an analog amplifier and an analog filter as described below.</p> <p>Specifically, the Technicolor CGM4140 has applicable circuitry and/or software modules constituting at least an analog amplifier. For example, the Technicolor CGM4140, via applicable circuitry and/or software modules of its BCM3390 SoC, has at least an analog amplifier, highlighted in yellow below.</p> |

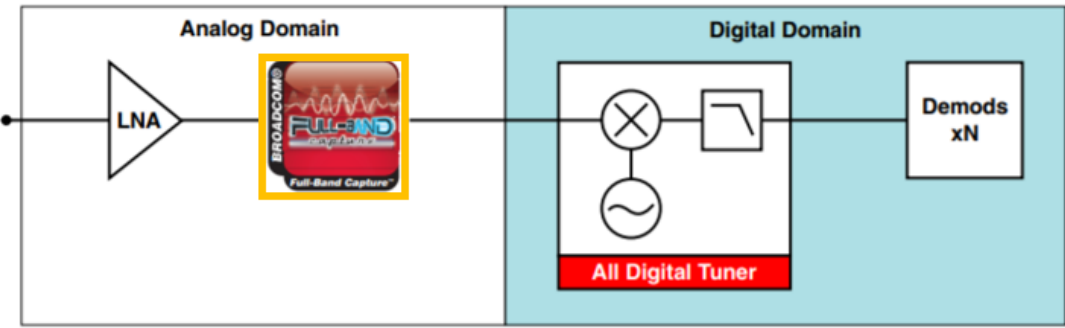
| # | U.S. Patent No. 11,399,206 | Accused Products and Services |
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| | | <p data-bbox="772 289 1415 318">Full-Band Capture Digital Tuner Architecture</p>  <p data-bbox="730 639 1808 672">(ENTROPIC_COMCAST_002029 at ENTROPIC_COMCAST_002031, annotated)</p> <p data-bbox="730 724 1942 878">Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions.</p> |
| 19 | <p data-bbox="260 938 705 1179">19. The method of claim 13, wherein the method comprises: demodulating each digitally down converted, desired channel to generate a plurality of demodulated channels.</p> | <p data-bbox="730 938 1942 1052">The Accused Set Top Products and Accused Cable Modem Products demodulate each digitally down converted, desired channel to generate a plurality of demodulated channels as described below.</p> <p data-bbox="730 1105 1942 1263">Specifically, the Technicolor CGM4140 has applicable circuitry and/or software modules constituting a plurality of demodulators. For example, the Arris Technicolor CGM4140, via applicable circuitry and/or software modules of its BCM3390 SoC, has a plurality of demodulators, highlighted in purple below. The demodulators are operable to demodulate the desired channels.</p> |

| # | U.S. Patent No. 11,399,206 | Accused Products and Services |
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| | | <p data-bbox="772 248 1528 280">Full-Band Capture Digital Tuner Architecture</p>  <p data-bbox="730 654 1812 686">(ENTROPIC_COMCAST_002029 at ENTROPIC_COMCAST_002031, annotated)</p> <p data-bbox="730 735 1948 938">“Full-Band Capture digital tuning technology and remote diagnostics: Integrated on-chip technology directly samples and digitizes the entire 1GHz downstream spectrum of a cable plant, providing access to any channel anywhere. Remote diagnostics provides real time, unobtrusive diagnostic and spectrum analysis capabilities, without effecting user service on any of the 24 downstream channels.”</p> <p data-bbox="730 946 1665 979">(ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p data-bbox="730 1027 1948 1190">Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions.</p> |
| 21 | 21. The method of claim 13, wherein: the plurality of desired channels comprises at least one cable broadcast channel. | For the Accused Set Top Products, the plurality of desired channels comprises at least one cable broadcast channel as described below. |

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| | | <p>Specifically, Comcast provides cable television services, including viewing and recording of desired television content. The plurality of desired channels includes at least this desired television content, which constitutes at least one cable broadcast channel.</p> <p>“Full-Band Capture digital tuning technology and remote diagnostics: Integrated on-chip technology directly samples and digitizes the entire 1GHz downstream spectrum of a cable plant, providing access to any channel anywhere. Remote diagnostics provides real time, unobtrusive diagnostic and spectrum analysis capabilities, without effecting user service on any of the 24 downstream channels.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p>“Bandwidth flexibility: Supports DOCSIS and digital video on any frequency eliminating limitations of "block" tuners. When combined with Broadcom's set-top box SoC with fast acquisition technology, video channels can be pre-tuned and users can enjoy the experience of Broadcom's FastRTV™ fast channel change technology.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p>“Storage Capacity: Currently, your X1 DVR can record approximately 150 total hours of HD programming on the hard drive.” (ENTROPIC_COMCAST_002961 at ENTROPIC_COMCAST_002963)</p> <p>Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions.</p> |
| 23 | 23. The method of claim 13, wherein: the method is performed | The Accused Set Top Products are a device comprising a digital video recorder (DVR) that performs the method as described below. |

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| | by a device comprising a digital video recorder (DVR). | <p><i>See</i> 25e.</p> <p>“Storage Capacity: Currently, your X1 DVR can record approximately 150 total hours of HD programming on the hard drive.”</p> <p>(ENTROPIC_COMCAST_002961 at ENTROPIC_COMCAST_002963)</p> |
| 25pre | 25. A method for receiving a television (TV) signal comprising: | <p>The Accused Services perform the claimed method utilizing, for example, the Accused Set Top Products, which include at least one set top box (“STB”) located at each subscriber location, including, for example, the Arris AX013ANC STB, Arris AX013ANM STB, Arris AX014ANC STB, Arris AX014ANM STB, Arris MX011ANC STB, Arris MX011ANM STB, Pace PX013ANC STB, Pace PX013ANM STB, Pace PX022ANC STB, Pace PX022ANM STB, Samsung SX022ANC STB, Samsung SX022ANM STB, and products that operate in a similar manner.</p> <p>By way of example, the Arris AX013ANM is charted herein. As described below, the Arris AX013ANM has a Broadcom BCM33843 SoC. On informed belief, the Arris AX013ANM is representative of all Accused Set Top Products, including those having BCM3383, BCM3384, BCM33843, or BCM3390 SoCs.</p> |
| 25a | receiving an input signal from a cable network; | <p>The Accused Set Top Products receive an input signal from a cable network as described below.</p> <p>Specifically, the Arris AX013ANM has applicable circuitry and/or software modules constituting a wideband ADC. For example, the Arris AX013ANM has a Broadcom BCM33843 SoC, shown in red in the annotated photograph below. The Arris AX013ANM has at least one RF connector, shown in blue in the annotated photograph below, that couples to a cable network owned and/or operated by Comcast. The Arris AX013ANM receives an input signal from the cable network.</p> |

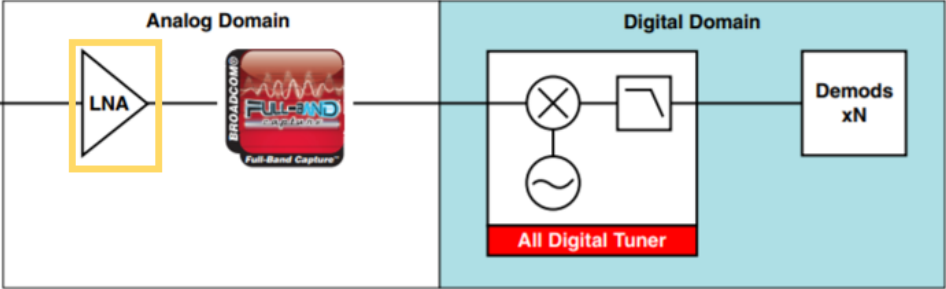
| # | U.S. Patent No. 11,399,206 | Accused Products and Services |
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| | | <div data-bbox="730 240 1507 1003"><p data-bbox="751 784 982 865">BCM33843 SoC RF Input</p></div> <p data-bbox="730 1057 1944 1255">“Full-Band Capture digital tuning technology and remote diagnostics: Integrated on-chip technology directly samples and digitizes the entire 1GHz downstream spectrum of a cable plant, providing access to any channel anywhere. Remote diagnostics provides real time, unobtrusive diagnostic and spectrum analysis capabilities, without effecting user service on any of the 24 downstream channels.”</p> <p data-bbox="730 1268 1667 1300">(ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> |

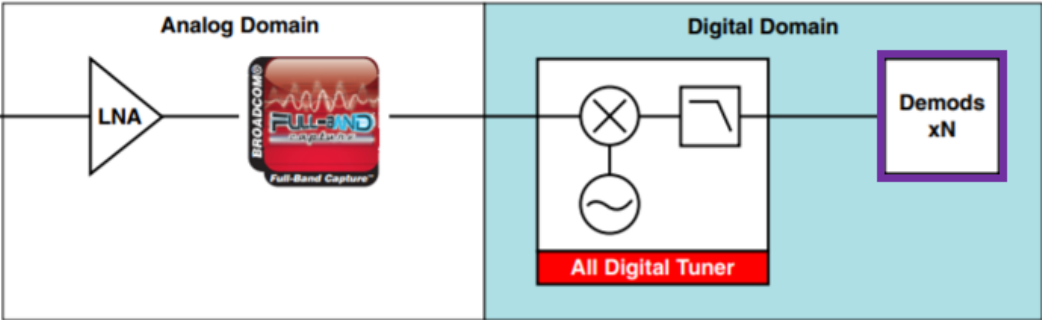
| # | U.S. Patent No. 11,399,206 | Accused Products and Services |
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| | | <p>“Bandwidth flexibility: Supports DOCSIS and digital video on any frequency eliminating limitations of "block" tuners. When combined with Broadcom's set-top box SoC with fast acquisition technology, video channels can be pre-tuned and users can enjoy the experience of Broadcom's FastRTV™ fast channel change technology.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> |
| 25b | <p>digitizing a contiguous band of frequencies in the input signal via a wideband analog-to-digital converter (ADC), wherein the contiguous band of frequencies comprises all received channels that exist in the input signal and the received channels comprise a plurality of desired channels and a plurality of undesired channels;</p> | <p>The Accused Set Top Products digitize a contiguous band of frequencies in the input signal via a wideband analog-to-digital converter (ADC), wherein the contiguous band of frequencies comprises all received channels that exist in the input signal and the received channels comprise a plurality of desired channels and a plurality of undesired channels as described below.</p> <p>Specifically, the Arris AX013ANM has applicable circuitry and/or software modules constituting a wideband ADC. For example, the Arris AX013ANM, using applicable circuitry and/or software modules contained in the BCM33843 SoC, provides a wideband ADC, highlighted in orange below. The Arris AX013ANM digitizes a contiguous band of frequencies in the input signal, where the contiguous band constitutes all received channels, which includes desired and undesired channels.</p> <p>Full-Band Capture Digital Tuner Architecture</p>  <p>(ENTROPIC_COMCAST_002029 at ENTROPIC_COMCAST_002031, annotated)</p> |

| # | U.S. Patent No. 11,399,206 | Accused Products and Services |
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| | | <p>“Full-Band Capture digital tuning technology and remote diagnostics: Integrated on-chip technology directly samples and digitizes the entire 1GHz downstream spectrum of a cable plant, providing access to any channel anywhere. Remote diagnostics provides real time, unobtrusive diagnostic and spectrum analysis capabilities, without effecting user service on any of the 24 downstream channels.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p>“Bandwidth flexibility: Supports DOCSIS and digital video on any frequency eliminating limitations of "block" tuners. When combined with Broadcom's set-top box SoC with fast acquisition technology, video channels can be pre-tuned and users can enjoy the experience of Broadcom's FastRTV™ fast channel change technology.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p>Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions.</p> |
| 25c | concurrently selecting each of the plurality of desired channels from the input signal without selecting any of the plurality of undesired channels; and | <p>The Accused Set Top Products concurrently select each of the plurality of desired channels from the input signal without selecting any of the plurality of undesired channels as described below.</p> <p>Specifically, the Arris AX013ANM has applicable circuitry and/or software modules configured to concurrently selecting each of the plurality of desired channels from the input signal without selecting any of the plurality of undesired channels. For example, the Arris AX013ANM, using applicable circuitry and/or software modules contained in the BCM33843 SoC, provides full band capture digital tuning of the input signal. On informed belief, full band capture digital tuning includes concurrently selecting each of the plurality of desired channels from the input signal without selecting any of the plurality of undesired channels.</p> |

| # | U.S. Patent No. 11,399,206 | Accused Products and Services |
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| | | <p>“Full-Band Capture digital tuning technology and remote diagnostics: Integrated on-chip technology directly samples and digitizes the entire 1GHz downstream spectrum of a cable plant, providing access to any channel anywhere. Remote diagnostics provides real time, unobtrusive diagnostic and spectrum analysis capabilities, without effecting user service on any of the 24 downstream channels.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p>“Bandwidth flexibility: Supports DOCSIS and digital video on any frequency eliminating limitations of "block" tuners. When combined with Broadcom's set-top box SoC with fast acquisition technology, video channels can be pre-tuned and users can enjoy the experience of Broadcom's FastRTV™ fast channel change technology.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p>Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions.</p> |
| 25d | providing the plurality of desired channels, | <p>The Accused Set Top Products provide the plurality of desired channels, as described below.</p> <p>Specifically, the Arris AX013ANM has applicable circuitry and/or software modules constituting a digital frontend that concurrently selects and provides each of the plurality of desired channels without providing any of the plurality of undesired channels. For example, the Arris AX013ANM, using applicable circuitry and/or software modules contained in the BCM33843 SoC, provides full band capture digital tuning of the input signal. On informed belief, full band capture digital tuning includes providing the desired channels. For example, The Arris AX013ANM has applicable circuitry and/or software modules operable to process a television channel to recover content carried on the plurality of desired channels.</p> |

| # | U.S. Patent No. 11,399,206 | Accused Products and Services |
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| | | <p>“Full-Band Capture digital tuning technology and remote diagnostics: Integrated on-chip technology directly samples and digitizes the entire 1GHz downstream spectrum of a cable plant, providing access to any channel anywhere. Remote diagnostics provides real time, unobtrusive diagnostic and spectrum analysis capabilities, without effecting user service on any of the 24 downstream channels.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p>“Supports DOCSIS and digital video on any frequency eliminating limitations of “block” tuners. When combined with Broadcom’s set-top box SoC with fast acquisition technology, video channels can be pre-tuned and users can enjoy the experience of Broadcom's FastRTV™ fast channel change technology.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p>Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions.</p> |
| 25e | wherein the method is performed by a device comprising a digital video recorder (DVR). | <p>The Accused Set Top Products are a device comprising a digital video recorder (DVR) that performs the method as described below.</p> <p>Specifically, the Arris AX013ANM constitutes a DVR capable of storing programming on its hard drive.</p> <p>“Storage Capacity: Currently, your X1 DVR can record approximately 150 total hours of HD programming on the hard drive.” (ENTROPIC_COMCAST_002961 at ENTROPIC_COMCAST_002963)</p> |
| | | |

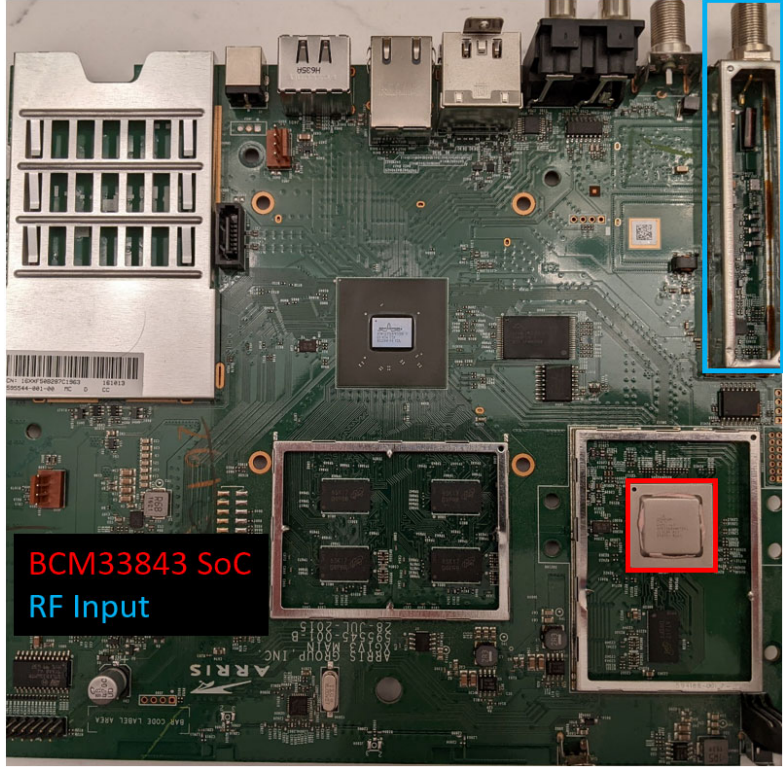
| # | U.S. Patent No. 11,399,206 | Accused Products and Services |
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| 26 | <p>26. The method of claim 25, wherein the method comprises: communicating the input signal from a cable network connector to the wideband ADC via at least one of an analog amplifier and an analog filter.</p> | <p>The Accused Set Top Products communicate the input signal from the cable network connector to the wideband ADC via at least one of an analog amplifier and an analog filter as described below.</p> <p>Specifically, the Arris AX013ANM has applicable circuitry and/or software modules constituting at least an analog amplifier. For example, the Arris AX013ANM, via applicable circuitry and/or software modules of its BCM33843 SoC, has at least an analog amplifier, highlighted in yellow below.</p> <p style="text-align: center;">Full-Band Capture Digital Tuner Architecture</p>  <p>(ENTROPIC_COMCAST_002029 at ENTROPIC_COMCAST_002031, annotated)</p> <p>Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions.</p> |
| 31 | <p>31. The method of claim 25, wherein the method comprises: demodulating, via each demodulator</p> | <p>The Accused Set Top Products demodulate, via each demodulator of a plurality of demodulators, a desired channel, of the plurality of desired channels as described below.</p> |

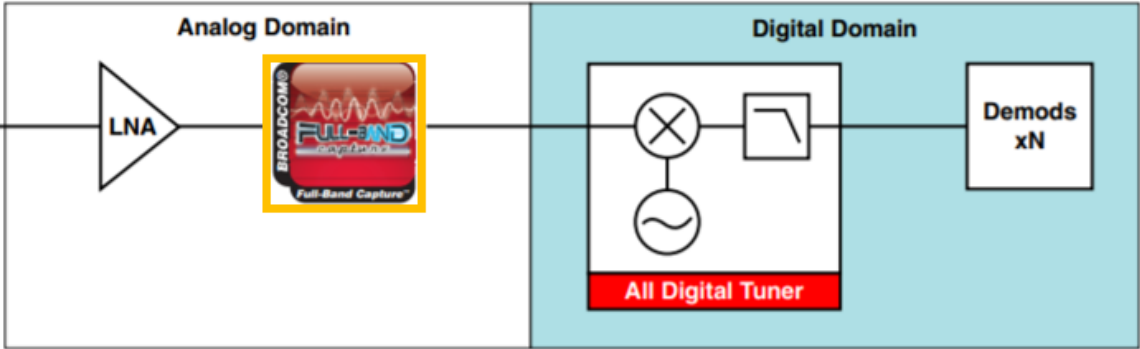
| # | U.S. Patent No. 11,399,206 | Accused Products and Services |
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| | <p>of a plurality of demodulators, a desired channel, of the plurality of desired channels.</p> | <p>Specifically, the Arris AX013ANM has applicable circuitry and/or software modules constituting a plurality of demodulators. For example, the Arris AX013ANM, via applicable circuitry and/or software modules of its BCM33843 SoC, has a plurality of demodulators, highlighted in purple below. The demodulators are operable to demodulate the desired channels.</p> <p>Full-Band Capture Digital Tuner Architecture</p>  <p>(ENTROPIC_COMCAST_002029 at ENTROPIC_COMCAST_002031, annotated)</p> <p>“Full-Band Capture digital tuning technology and remote diagnostics: Integrated on-chip technology directly samples and digitizes the entire 1GHz downstream spectrum of a cable plant, providing access to any channel anywhere. Remote diagnostics provides real time, unobtrusive diagnostic and spectrum analysis capabilities, without effecting user service on any of the 24 downstream channels.”</p> <p>(ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p>“Bandwidth flexibility: Supports DOCSIS and digital video on any frequency eliminating limitations of "block" tuners. When combined with Broadcom's set-top box SoC with fast acquisition technology, video channels can be pre-tuned and users can enjoy the experience of Broadcom's FastRTV™ fast channel change technology.”</p> <p>(ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> |

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| | | <p>Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions.</p> |
| 34 | <p>34. The method of claim 25, wherein the method comprises: providing the plurality of desired channels via a serial interface.</p> | <p>The Accused Set Top Products provide the plurality of desired channels via a serial interface as described below.</p> <p>More specifically, the Arris AX013ANM, using its applicable circuitry and/or software modules, outputs the desired channels from a filter to one or more demodulators. On informed belief, the output is via a serial interface. For example and on informed belief, the Arris AX013ANM, using applicable circuitry and/or software modules contained in the BCM33843 SoC, outputs the digital datastream from the filter (highlighted below in green) to the demodulators (highlighted below in purple) via a serial interface.</p> <div data-bbox="787 878 1732 1209" data-label="Diagram"> <p style="text-align: center;">Full-Band Capture Digital Tuner Architecture</p> </div> <p>(ENTROPIC_COMCAST_002029 at ENTROPIC_COMCAST_002031, annotated)</p> <p>Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement</p> |

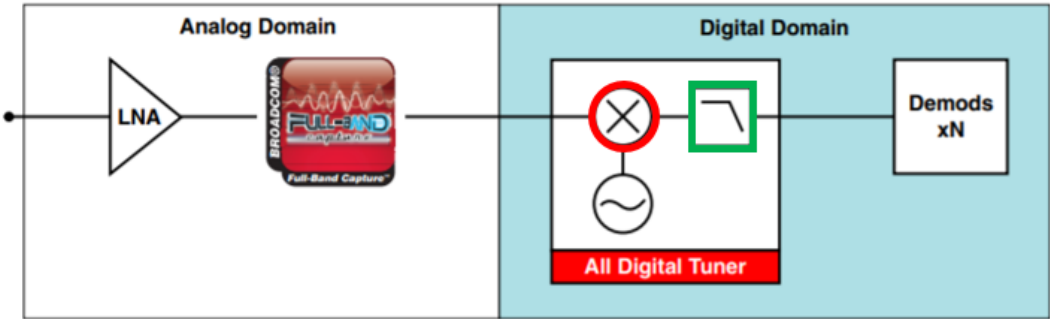
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| | | the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions. |
| 35 | 35. The method of claim 25, wherein: the plurality of desired channels comprises at least one cable broadcast channel. | <p>The plurality of desired channels comprises at least one cable broadcast channel as described below.</p> <p>Specifically, the Arris AX013ANM provides cable television services, including viewing and recording of desired television content. The plurality of desired channels includes at least this desired television content, which constitutes at least one cable broadcast channel.</p> <p>“Full-Band Capture digital tuning technology and remote diagnostics: Integrated on-chip technology directly samples and digitizes the entire 1GHz downstream spectrum of a cable plant, providing access to any channel anywhere. Remote diagnostics provides real time, unobtrusive diagnostic and spectrum analysis capabilities, without effecting user service on any of the 24 downstream channels.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p>“Bandwidth flexibility: Supports DOCSIS and digital video on any frequency eliminating limitations of "block" tuners. When combined with Broadcom's set-top box SoC with fast acquisition technology, video channels can be pre-tuned and users can enjoy the experience of Broadcom's FastRTV™ fast channel change technology.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p>“Storage Capacity: Currently, your X1 DVR can record approximately 150 total hours of HD programming on the hard drive.” (ENTROPIC_COMCAST_002961 at ENTROPIC_COMCAST_002963)</p> |

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| | | Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions. |
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| 38pre | 38. A method comprising: | <p>The Accused Services perform the claimed method utilizing, for example, the Accused Set Top Products, which include at least one set top box (“STB”) located at each subscriber location, including, for example, the Arris AX013ANC STB, Arris AX013ANM STB, Arris AX014ANC STB, Arris AX014ANM STB, Arris MX011ANC STB, Arris MX011ANM STB, Pace PX013ANC STB, Pace PX013ANM STB, Pace PX022ANC STB, Pace PX022ANM STB, Samsung SX022ANC STB, Samsung SX022ANM STB, and products that operate in a similar manner.</p> <p>By way of example, the Arris AX013ANM is charted herein. As described below, the Arris AX013ANM has a Broadcom BCM33843 SoC. On informed belief, the Arris AX013ANM is representative of all Accused Set Top Products, including those having BCM3383, BCM3384, BCM33843, or BCM3390 SoCs.</p> |
| 38a | receiving an input signal from a cable network; | <p>The Accused Set Top Products receive an input signal from a cable network as described below.</p> <p>Specifically, the Arris AX013ANM has applicable circuitry and/or software modules constituting a wideband ADC. For example, the Arris AX013ANM has a Broadcom BCM33843 SoC, shown in red in the annotated photograph below. The Arris AX013ANM has at least one RF connector, shown in blue in the annotated photograph below, that couples to a cable network owned and/or operated by Comcast. The Arris AX013ANM receives an input signal from the cable network.</p> |

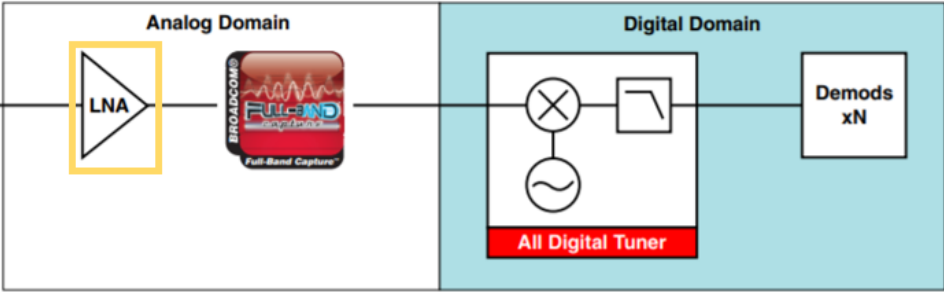
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| | |  <p>BCM33843 SoC RF Input</p> <p>“Full-Band Capture digital tuning technology and remote diagnostics: Integrated on-chip technology directly samples and digitizes the entire 1GHz downstream spectrum of a cable plant, providing access to any channel anywhere. Remote diagnostics provides real time, unobtrusive diagnostic and spectrum analysis capabilities, without effecting user service on any of the 24 downstream channels.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> |

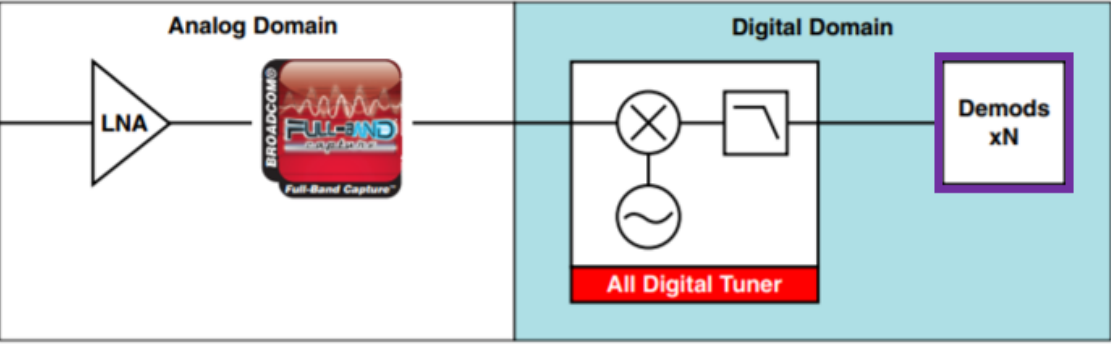
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| | | <p>“Bandwidth flexibility: Supports DOCSIS and digital video on any frequency eliminating limitations of "block" tuners. When combined with Broadcom's set-top box SoC with fast acquisition technology, video channels can be pre-tuned and users can enjoy the experience of Broadcom's FastRTV™ fast channel change technology.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> |
| 38b | <p>digitizing all received channels in the input signal via a wideband analog-to-digital converter (ADC), wherein the received channels comprise a plurality of desired channels and a plurality of undesired channels; and</p> | <p>The Accused Set Top Products digitize all received channels in the input signal via a wideband analog-to-digital converter (ADC), wherein the received channels comprise a plurality of desired channels and a plurality of undesired channels as described below.</p> <p>Specifically, the Arris AX013ANM has applicable circuitry and/or software modules constituting a wideband ADC. For example, the Arris AX013ANM, using applicable circuitry and/or software modules contained in the BCM33843 SoC, provides a wideband ADC, highlighted in orange below. The Arris AX013ANM digitizes all received channels, which includes desired and undesired channels.</p> <p>Full-Band Capture Digital Tuner Architecture</p>  <p>(ENTROPIC_COMCAST_002029 at ENTROPIC_COMCAST_002031, annotated)</p> |

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| | | <p>“Full-Band Capture digital tuning technology and remote diagnostics: Integrated on-chip technology directly samples and digitizes the entire 1GHz downstream spectrum of a cable plant, providing access to any channel anywhere. Remote diagnostics provides real time, unobtrusive diagnostic and spectrum analysis capabilities, without effecting user service on any of the 24 downstream channels.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p>“Bandwidth flexibility: Supports DOCSIS and digital video on any frequency eliminating limitations of "block" tuners. When combined with Broadcom's set-top box SoC with fast acquisition technology, video channels can be pre-tuned and users can enjoy the experience of Broadcom's FastRTV™ fast channel change technology.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p>Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions.</p> |
| 38c | digitally down converting each desired channel, of the plurality of desired channels, to generate a plurality of digital channel outputs, | <p>The Accused Set Top Products digitally down convert each desired channel, of the plurality of desired channels, to generate a plurality of digital channel outputs as described below.</p> <p>Specifically, the Arris AX013ANM includes has applicable circuitry and/or software modules constituting a mixer module operating on the digitized signal. For example, the applicable circuitry and/or software modules of the Arris AX013ANM utilize advanced signal processing techniques, including a mixer, which can be used to digitally downconvert the plurality of desired television channels. For example, the Arris AX013ANM receives an analog signal that includes a plurality of television channels and creates a digital representation of the entire 1GHz downstream spectrum of the analog signal. The composite broadband signal contains a plurality of digital QAM channels, some of which are desired channels and some of which are undesired</p> |

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| | | <p>channels. The Arris AX013ANM tunes the resulting series of binary values within the composite digital broadband signal, and shifts (i.e., downconverts) the frequency of the QAM channel desired to baseband, which constitutes the digital channel outputs. For example, as described below, applicable circuitry and/or software modules of the Broadcom BCM33843 SoC includes a mixer module (highlighted below in red) and a filter (highlighted below in green) used to frequency shift (i.e., downconvert) the digitized QAM channels in the composite broadband signal from a higher frequency to a lower frequency (i.e., a baseband frequency).</p> <p style="text-align: center;">Full-Band Capture Digital Tuner Architecture</p>  <p>(ENTROPIC_COMCAST_002029 at ENTROPIC_COMCAST_002031, annotated)</p> <p>“The new BCM3384 DOCSIS®/Euro-DOCSIS™ 3.0 cable gateway SoC combines Broadcom's Full-Band Capture (FBC) digital tuning technology with remote diagnostics, dual-band concurrent Wi-Fi, a custom, dedicated applications processor and integrated DECT 6.0 CAT-iq 2.0. ... Broadcom’s new BCM33843 is pin compatible ... Broadcom is now sampling [as of Jan 08, 2013] the BCM3384 and BCM33843”</p> <p>(ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002036)</p> <p>“Full-Band Capture digital tuning technology and remote diagnostics: Integrated on-chip technology directly samples and digitizes the entire 1GHz downstream spectrum of a cable</p> |

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| | | <p>plant, providing access to any channel anywhere. Remote diagnostics provides real time, unobtrusive diagnostic and spectrum analysis capabilities, without effecting user service on any of the 24 downstream channels.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p>Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions.</p> |
| 38d | wherein the method is performed by a device comprising a digital video recorder (DVR). | <p>The Accused Set Top Products are a device comprising a digital video recorder (DVR) that performs the method as described below.</p> <p>Specifically, the Arris AX013ANM constitutes a DVR capable of storing programming on its hard drive.</p> <p>“Storage Capacity: Currently, your X1 DVR can record approximately 150 total hours of HD programming on the hard drive.” (ENTROPIC_COMCAST_002961 at ENTROPIC_COMCAST_002963)</p> |
| 39 | 39. The method of claim 38, wherein the method comprises: communicating the input signal from a cable network connector to the wideband ADC via at least one of an analog amplifier and an analog filter. | <p>The Accused Set Top Products communicate the input signal from the cable network connector to the wideband ADC via at least one of an analog amplifier and an analog filter as described below.</p> <p>Specifically, the Arris AX013ANM has applicable circuitry and/or software modules constituting at least an analog amplifier. For example, the Arris AX013ANM, via applicable circuitry and/or software modules of its BCM33843 SoC, has at least an analog amplifier, highlighted in yellow below. On informed belief, the analog amplifier used to communicate the input signal from the cable network connector to the wideband ADC.</p> |

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| | | <p data-bbox="772 289 1415 318">Full-Band Capture Digital Tuner Architecture</p>  <p data-bbox="730 639 1808 672">(ENTROPIC_COMCAST_002029 at ENTROPIC_COMCAST_002031, annotated)</p> <p data-bbox="730 724 1944 878">Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions.</p> |
| 44 | <p data-bbox="260 938 705 1179">44. The method of claim 38, wherein the method comprises: demodulating each digitally down converted, desired channel to generate a plurality of demodulated channels.</p> | <p data-bbox="730 938 1944 1011">The Accused Set Top Products demodulate each digitally down converted, desired channel to generate a plurality of demodulated channels described below.</p> <p data-bbox="730 1063 1944 1260">Specifically, the Arris AX013ANM has applicable circuitry and/or software modules constituting a plurality of demodulators. For example, the Arris AX013ANM, via applicable circuitry and/or software modules of its BCM33843 SoC, has a plurality of demodulators, highlighted in purple below. The demodulators demodulate the desired channels to generate demodulated channels.</p> |

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| | | <p data-bbox="772 248 1528 280">Full-Band Capture Digital Tuner Architecture</p>  <p data-bbox="730 654 1812 686">(ENTROPIC_COMCAST_002029 at ENTROPIC_COMCAST_002031, annotated)</p> <p data-bbox="730 735 1948 938">“Full-Band Capture digital tuning technology and remote diagnostics: Integrated on-chip technology directly samples and digitizes the entire 1GHz downstream spectrum of a cable plant, providing access to any channel anywhere. Remote diagnostics provides real time, unobtrusive diagnostic and spectrum analysis capabilities, without effecting user service on any of the 24 downstream channels.”</p> <p data-bbox="730 946 1665 979">(ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p data-bbox="730 1027 1948 1190">“Bandwidth flexibility: Supports DOCSIS and digital video on any frequency eliminating limitations of "block" tuners. When combined with Broadcom's set-top box SoC with fast acquisition technology, video channels can be pre-tuned and users can enjoy the experience of Broadcom's FastRTV™ fast channel change technology.”</p> <p data-bbox="730 1198 1665 1230">(ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p data-bbox="730 1287 1948 1360">Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement</p> |

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| | | the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions. |
| 47 | <p>47. The method of claim 38, wherein the method comprises: providing the plurality of digital channel outputs via a serial interface.</p> | <p>The Accused Set Top Products provide the plurality of digital channel outputs via a serial interface as described below.</p> <p>More specifically, the Arris AX013ANM, using its applicable circuitry and/or software modules, outputs the digital datastream from a filter to one or more demodulators. On informed belief, the digital datastream is output via a serial interface. For example and on informed belief, the Arris AX013ANM, using applicable circuitry and/or software modules contained in the BCM33843 SoC, outputs the digital datastream from the filter (highlighted below in green) to the demodulators (highlighted below in purple) via a serial interface.</p> <div data-bbox="787 792 1732 1128" data-label="Diagram"> <p style="text-align: center;">Full-Band Capture Digital Tuner Architecture</p> </div> <p>(ENTROPIC_COMCAST_002029 at ENTROPIC_COMCAST_002031, annotated)</p> <p>Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions.</p> |

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| 48 | <p>48. The method of claim 38, wherein: the plurality of desired channels comprises at least one cable broadcast channel.</p> | <p>The plurality of desired channels comprises at least one cable broadcast channel as described below.</p> <p>Specifically, the Arris AX013ANM provides cable television services, including viewing and recording of desired television content. The plurality of desired channels includes at least this desired television content, which constitutes at least one cable broadcast channel.</p> <p>“Full-Band Capture digital tuning technology and remote diagnostics: Integrated on-chip technology directly samples and digitizes the entire 1GHz downstream spectrum of a cable plant, providing access to any channel anywhere. Remote diagnostics provides real time, unobtrusive diagnostic and spectrum analysis capabilities, without effecting user service on any of the 24 downstream channels.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p>“Bandwidth flexibility: Supports DOCSIS and digital video on any frequency eliminating limitations of "block" tuners. When combined with Broadcom's set-top box SoC with fast acquisition technology, video channels can be pre-tuned and users can enjoy the experience of Broadcom's FastRTV™ fast channel change technology.” (ENTROPIC_COMCAST_002035 at ENTROPIC_COMCAST_002037)</p> <p>“Storage Capacity: Currently, your X1 DVR can record approximately 150 total hours of HD programming on the hard drive.” (ENTROPIC_COMCAST_002961 at ENTROPIC_COMCAST_002963)</p> <p>Discovery will provide detailed information regarding implementation and identification of the specific components, source code, software and/or other instrumentalities used to implement</p> |

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| | | the claimed method. As additional information is obtained through discovery related to the Accused Services and related instrumentalities, Entropic will supplement these contentions. |